Australian Government

Department of Education, Employment and Workplace Relations

MEM30027A Prepare basic programs for programmable logic controllers

Release: 1

ISC INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MEM30027A Prepare basic programs for programmable logic controllers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers writing, testing, editing and monitoring programs using a hand program loader.

Application of the Unit

Application of the unit	This unit applies to all fields of engineering and manufacturing. Work is done under supervision. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units	

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Write and test basic programs using a hand program loader	1.1. Programs are written in accordance with programming rules. 1.2. Programs are loaded into a PLC. 1.3. Programs are verified with a supervisor. 1.4. The operation of programs is tested with assistance from a supervisor.
2. Edit and monitor basic programs using a hand program loader	2.1. The monitoring function is used to verify circuit conditions and check the current values of timers and counters. 2.2. Editing features are used to make minor program changes.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • communicating • planning • assessing • problem solving • analysing • reading and interpreting engineering specifications, standard operating procedures and other applicable reference documents • organising information • using numeral operations, geometry and calculations/formulae within the scope of this unit • checking for conformance to specifications • planning and sequencing operations • checking and clarifying task-related information
Required knowledge
Look for evidence that confirms knowledge of:

REQUIRED SKILLS AND KNOWLEDGE

- hazards and control measures associated with preparing basic programs for PLC, including housekeeping
- safe work practices and procedures
- General knowledge of programmable controllers including:
- basic PLC operation: definitions, terminology and block diagrams; scan cycle
- basic programming rules; addressing for I/O; halt; run
- programming (using a hand programmer): flowcharts/steps to use when programming; clearing of memory; ladder format
- Boolean/mnemonic/statement list format; series circuits; parallel circuits; latching circuits; stack register operation; combination series/parallel circuits; inversion elements; timers
- counters; monitoring of discrete I/O and timer/counter values; edit (insert and delete elements)
- connection of discrete input and output devices to a PLC

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to prepare basic programs for programmable logic controllers.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
	This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with preparing basic programs for programmable logic controllers, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for	

EVIDENCE GUIDE	
assessment	

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Programs	Includes series elements, parallel elements, combination series parallel elements, basic timers and counters

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Engineering technician

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